Computational Geometry 42 (2009) 723

Contents lists available at ScienceDirect

Computational Geometry: Theory and Applications

www.elsevier.com/locate/comgeo

Editorial

This special issue contains a selection of papers from the *23rd European Workshop on Computational Geometry (EuroCG'07)*, which was held on 19–21 March 2007 in Graz, Austria. The workshop, with its 63 presentations, touched upon a wide spectrum of topics in computational geometry. This issue features seven fully reviewed papers from the workshop, being both of theoretical nature and shedding light into important practical structures and algorithms.

In *Transforming spanning trees: A lower bound*, Buchin et al. study crossing-free straight-line spanning trees for a given planar point set. They give (almost) optimal lower bounds on the length of sequences of such trees, in which consecutive trees do not cross. Sequences of this kind are related to the flip graph of pseudo-triangulations for the considered point set.

Chaudhuri and Koltun, in *Smoothed analysis of probabilistic roadmaps*, derive a smoothed polynomial upper bound on the number of samples required to calculate an accurate probabilistic roadmap. This provides the first theoretical runtime result for roadmap algorithms, a popular and practically very efficient motion planning heuristic.

Demaine et al. devote their paper *Wrapping spheres with flat paper* to the problem of identifying shapes of small area or perimeter that are capable of wrapping the unit sphere and, at the same time, can tile the plane. The applied foldings, which can change curvature at all points, are motivated by the problem of wrapping spherical confectionaries (for example, Mozartkugeln) by aluminum foil.

In the paper *On the complexity of umbra and penumbra*, Demouth et al. provide a variety of upper and lower bounds on the combinatorial complexity of the umbra and penumbra, cast on a plane by non-point light sources and in the presence of convex polyhedral obstacles. The results of the authors show that the umbra, which is bounded by curved arcs, is more complex than the boundary between penumbra and fully illuminated areas which is piecewise linear.

Dimitrov et al., in *Bounds on the quality of the PCA bounding boxes*, investigate the accuracy of bounding boxes computed by the common approach of principal component analysis. The authors demonstrate that for discrete points sets, such bounding boxes may be arbitrarily off the minimum, whereas for convex sets, upper (and also lower) bounds are provided.

Edges and switches, tunnels and bridges, by Eppstein et al., is dedicated to the problem of drawing non-planar graphs in a readable way by means of edge casing. For several concepts of readability and the resulting optimization problems, the authors design polynomial time algorithms or prove that the problem is NP-hard.

Silveira and van Kreveld, in *Optimal higher order Delaunay triangulations of polygons*, consider the question of triangulating a polygon optimally using order-k Delaunay triangulations, for several quality measures. Their algorithm improves over the runtime of $O(n^3)$ required for normal triangulations. The authors also extend their results to triangulating point sets efficiently for small values of k.

We are especially grateful to the authors for submitting their papers to this issue and to all referees for their valuable work. Finally, we wish to thank the Editors-in-Chief of CGTA for providing us the opportunity for this special issue.

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Available online 25 February 2009

0925-7721/$ – see front matter
doi:10.1016/j.comgeo.2009.02.003